

CLAIM AMENDMENTS

1. (Currently amended) A solid-state electronic junction comprising:

a first conductive component, said first conductive component comprising:

a substrate having a contact surface; and

at least one layer of molecular units having first and second ends, wherein

at least one layer of molecular units is attached through their first ends to

said contact surface through a type of association selected from the group

consisting of: covalent bonding and strong electronic coupling; and

a second conductive component ~~in electrical communication with said second~~

~~ends of at least one layer of said molecular units, said second conductive~~

~~component~~ comprising a layer of at least one metal and at least one metal oxide

adjacent to, and in electrical communication with, said second ends of said at

least one layer of said molecular units, said layer of at least one metal and at

least one metal oxide having a conductance, ~~said layer comprising at least one~~

~~metal and at least one metal oxide, wherein said conductance of said layer that~~

reversibly changes in response to a reduction-oxidation reaction occurring

between ~~[[in]]~~ said layer of at least one metal and at least one metal oxide and

said at least one layer of molecular units when a voltage is applied across said

electronic junction, wherein said electronic junction is devoid of electrolytic

solution.

2. (Original) The electronic junction according to claim 1 wherein at least one said layer of molecular units comprises a chemical structure capable of being changed from a relatively non-conductive state to a relatively conductive state by the application of a stimulus.

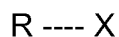
3. (Original) The electronic junction according to claim 1 wherein said second conductive component is capable of storing a charge.

4. (Original) The electronic junction according to claim 1 wherein said chemical structure comprises at least one aromatic group when in said relatively non-conductive state.

5. (Currently amended) The electronic junction according to claim 4 wherein said chemical structure is selected from the group consisting of: substituted phenyl groups, unsubstituted phenyl groups, substituted benzyl groups, unsubstituted benzyl groups, substituted phenolic groups, unsubstituted phenolic groups[[.]], substituted metalloporphyrin rings, unsubstituted metalloporphyrin rings, substituted ferrocene groups and unsubstituted ferrocene groups.

6. (Original) The electronic junction according to claim 4 wherein said chemical structure is selected from the group consisting of: biphenyl groups, fluorene groups, anthracene groups, phenanthrene groups, polyphenylene groups, polynuclear aromatic hydrocarbon groups, nitrated biphenyl groups, azobenzyl groups, and nitroazobenzyl groups.

7. (Original) The electronic junction according to claim 4 wherein said molecular units are chemically bonded to said contact surface of said substrate by a chemical bond having the formula:



wherein R is a metal, silicon or carbon atom of said substrate and X is an oxygen or carbon atom of said molecular unit.

8. (Original) The electronic junction according to claim 1 wherein said first conductive component comprises electrically conductive carbon.

9. (Original) The electronic junction according to claim 1 wherein said molecular units of a given layer are substantially the same length.

10. (Original) The electronic junction according to claim 1 wherein said second conductive component is chemically bound to said second ends of at least one layer of molecular units.

11. (Original) The electronic junction according to claim 1 wherein said molecular units in at least one layer are substantially parallel to one another.

12. (Original) The electronic junction according to claim 1 wherein at least some of said molecular units form an arrangement of molecular orbitals such that said electronic junction is capable of functioning as a semiconductor.

13. (Original) The electronic junction according to claim 1 wherein said metal is selected from the group consisting of: titanium, silver, gold, tungsten, and copper.

14. (Original) The electronic junction according to claim 1 wherein said metal oxide is selected from the group consisting of: titanium oxide, silver oxide, gold oxide, tungsten oxide, and copper oxide.

15. (Cancelled)

16. (Cancelled)

17. (Original) The electronic junction according to claim 1 wherein said second conductive component additionally comprises at least one ion.

18. (Cancelled)

19. (Cancelled)

20. (Cancelled)

21. (Cancelled)

22. (Cancelled)

23. (Cancelled)

24. (Cancelled)

25. (Cancelled)

26. (Cancelled)

27. (Cancelled)

28. (Cancelled)

29. (Cancelled)

30. (Cancelled)

31. (Cancelled)

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32. (Cancelled)

33. (Cancelled)